

MEMOIRS  
OF THE  
GEOLOGICAL SURVEY  
OF  
THE UNITED KINGDOM.

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*Figures and Descriptions*

ILLUSTRATIVE OF  
BRITISH ORGANIC REMAINS.

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DECADE V.  
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PUBLISHED BY ORDER OF THE LORDS COMMISSIONERS OF HER MAJESTY'S TREASURY.

LONDON:  
PRINTED FOR HER MAJESTY'S STATIONERY OFFICE:  
PUBLISHED BY  
LONGMAN, BROWN, GREEN, AND LONGMANS.  
1856.

## BRITISH FOSSILS.

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### DECADE THE FIFTH.

IN apologizing for the unavoidable delay which has taken place in the publication of this Decade, owing to the much lamented decease of Professor Edward Forbes, it is right to state that the materials left behind by him were scanty, and had been unfortunately mislaid a short time before his death. The first description only, that of *Solaster Moretonis*, had been fully written by him; of the others, we had here and there notes on the distinctive characters of the species, and of his views as to their synonymy or history. The plates, however, had been all engraved under his own eye, and the specific designations under which he wished the figures to stand, were recorded in the last edition of Morris's Catalogue. He had there also applied MS. names to a number of species to be described in the Decade.

In a few cases only it has been found necessary to alter some of these names; and this has been done in deference to an authority which would have been gladly admitted by Professor Forbes. To Mr. S. P. Woodward, of the British Museum, we are indebted for all the notes respecting these supplementary species; and he has also furnished full descriptions of three of the plates. With this valuable aid, and the friendly communications of Dr. T. Wright, of Cheltenham, we can present the Decade in nearly as complete a form as it would have possessed had our friend and Master lived to finish it. We miss, however, his lively remembrance of the living species, and his practical acquaintance with their variations,—deficiencies not to be supplied by reference to his published works.

Of the ten species figured three are new,—*Solaster Moretonis*, *Cidaris Carteri*, and *Pygaster conoideus*. Of the other genera, *Diadema*, *Echinopsis*, and *Echinus* present us with well-known types from the Oolitic rocks, which are continental as well as British. *Pyrina* is a rare genus in England, and in this, and the two figured species of *Pygaster*, we have excellent examples of that division of the *Cassidulidae* in which the ambulacra are of uniform character throughout. Several genera of this type have been figured in the Decades. The *Pygaster semisulcatus* is a critical species, and its synonymy is now for the first time cleared up. *Hemiaster Murchisonia* is another instance of the same kind, and belongs to a large genus of closely allied species. The *Brissus Scilla* is a Crag species still existing in the Mediterranean. None of these nine genera have before appeared in the Decades.

There are engraved plates sufficient for another fasciculus, upon which Professor Forbes left no memoranda, except the names of the species. These Plates will be published at a future period.

JOHN W. SALTER,  
*Palaeontologist.*

*Geological Survey Office, Jermyn Street, London,*  
*February 1856.*

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## BRITISH FOSSILS.

### DECADE V. PLATE X.

#### BRISSUS SCILLÆ.

[Genus BRISSUS. KLEIN. (Sub-kingdom Radiata. Class Echinodermata. Order Echinoidea. Family Spatangidæ.) Body oval or oblong, tumid; dorsal ambulacra subpetaloid, circumscribed by a peripetal fasciole; tubercles of dorsal surface all similar; anus terminal, supra-marginal; caudal extremity with a sub-anal fasciole.]

DIAGNOSIS. *B. dense tuberculatus* (*tuberculis anticis majoribus*) *oblongo-ovatus elevatus nec inflatus, margini subcompresso; vertice excentrico; interambulacro postico plus minusve carinato; ano verticali; fasciolâ peripetali antèrius sinuatâ et utrâque semel nec bis angulariter inflexâ.*

REFERENCE. *Scilla*, de Corp. Marinis, pl. 14. f. 2, 3. (*Spatangus placenta*, Philippi in Erichs. Archiv. for 1845, pl. 1. p. 349?) *Briss. Scillæ*, AGASSIZ and DESOR (1846), Ann. Sc. Nat., 3rd ser. tom. 8. p. 13. FORBES (1852), Palæontograph. Soc. Trans. (Ech. of the British Tertiaries) p. 15. pl. 2. fig. 4. in Morris's Catal., 2nd edit. (1854), p. 73.

"This sea urchin, one of the largest and most remarkable of all those found fossil in the crag, varies much in proportion, but is distinctly identical with *Scilla*'s species, which lives in the Mediterranean, and occurs fossil in the Miocene of Malta. I purposely omit, however, all references to Lamarck, as there is sad confusion about this *Brissus* and its allies.

"*Description*.—The length of our fine specimen, presented to the Museum of Practical Geology by E. H. Bunbury, Esq., is  $4\frac{3}{4}$  inches, breadth 3 inches, height  $2\frac{1}{2}$  inches. The species varies much in shape, some specimens being oblong, some wide and ovate; the former are usually high, and strongly subcarinated on the back, the latter are more depressed; but all have the apex strikingly eccentric, and the *anterior*\* extremity abruptly truncated.

\* Probably "posterior" was intended to be written here, but the word is preserved, as it is possible Prof. Forbes intended the steep slope of the anterior end. It can scarcely be called "truncated," much less "abruptly truncated."—J. W. S.



"The greatest width of the body is nearly on a line with the termination of the postero-lateral ambulacra. The tubercles of the back are numerous and closely set, and increase gradually in size in the antea region, and towards the apex. The lateral ambulacra are narrow, somewhat linear in shape, and deeply impressed, showing on the surface as four radiating furrows, two of which, the antero-lateral ones, stand at right angles to the longitudinal diameter of the test, whilst the other two, the postero-laterals, are directed obliquely backwards, and form with one another an acute angle at their apical terminations. The posterior pair of ambulacra are a little longer than the others, and contain rather more pairs of pores, the respective numbers in each row being about 27·30 or 30·35.

"The centro-ambulacral space is smooth, or nearly so, in the lateral ambulacra, but in the odd or antea ambulacrum, which, instead of being impressed and subpetaloid, is linear and plain, or even slightly elevated.\* It is regularly and minutely granulated, the large granules or small tubercles forming boundary rows. In the lateral ambulacra the ridges separating the pairs of pores are minutely granulated.

"The genital disk, usually obscured in fossil specimens, has four genital holes, the two posterior ones largest, and five eye perforations of a peculiar structure.

"The peripetal fasciole is very distinctly marked. In front of the antero-lateral ambulacra it includes a wide somewhat semicircular space, its foremost and central portion crossing the shell at a little below half its height. From this point tracing its course along each side, it runs with a slight angularity to about two thirds of the distance between the antea ambulacrum and the end of the antero-lateral one, before meeting which it makes a single strongly marked incurved flexure, in this respect differing from *Brissus carinatus*, the fasciole of which has two inflexions in this region. It then winds closely round the end of the antero-lateral ambulacrum, and ascends rapidly between it and the postero-lateral one, making a deep but wide flexure, somewhat truncated at its upper part, then curves down, following closely the bounds of the postero-lateral ambulacra, round which it winds and crosses the posterior inter-

\* In this fossil specimen, much more so than in any of the recent ones in the British Museum. The carination of the back, too, is considerably more marked.

Is there really any difference between the *B. carinatus*, Lam, from the Mauritius, and this Mediterranean species? The double angle of the fasciole is not always constant in *B. carinatus*, or absent in *B. Scilla*. The overhanging of the posterior end in the former is a better mark of difference, but a specimen in the British Museum from the Mauritius has it nearly perpendicular. The granulation, under surface, and ambulacra are very much the same in both.—J. W. S.

ambulacral space, with an arched curve not so deeply inturned as the lateral curves are.

"The anal extremity of the test is perpendicularly truncated (a character also distinctive between this species and *B. carinatus*), the anus lenticular and large, and placed rather low down, and the sub-anal or caudal fasciole broadly obcordate, truncated below. The mouth is transversely semicircular, with a slightly overhanging and prominent lip. The oral ambulacra are subtriangular. The tubercles of the post-oral spinous region are subequal and radiating, and closer set than on the lateral spaces, or in front of the mouth."

*Locality*.—CORALLINE CRAG, Iken, Ramsholt, and Sudbourn, in Suffolk. (Mus. Pract. Geology, British Museum, &c.)

*Foreign Localities*.—MIOCENE, Malta (Prof. Forbes). (Mus. Pract. Geology.)

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#### EXPLANATION OF THE PLATE.

Fig. 1. *Brissus Scille*, Ag., from Iken (Mus. Pract. Geology).

Fig. 2. Side view of do.

Fig. 3. End view, showing the anal opening and sub-caudal fasciole.

Fig. 4. Lateral view of another specimen, the vertex placed more anteriorly.

Fig. 5. Under view of recent specimen, to show the plates of the mouth.

Fig. 6. Genital openings and ocular plates, with the madreporic plate occupying the place of the fifth genital pore.

Fig. 7. Portion of peripetal fasciole, magnified.

Fig. 8. Tubercles and granules, magnified.

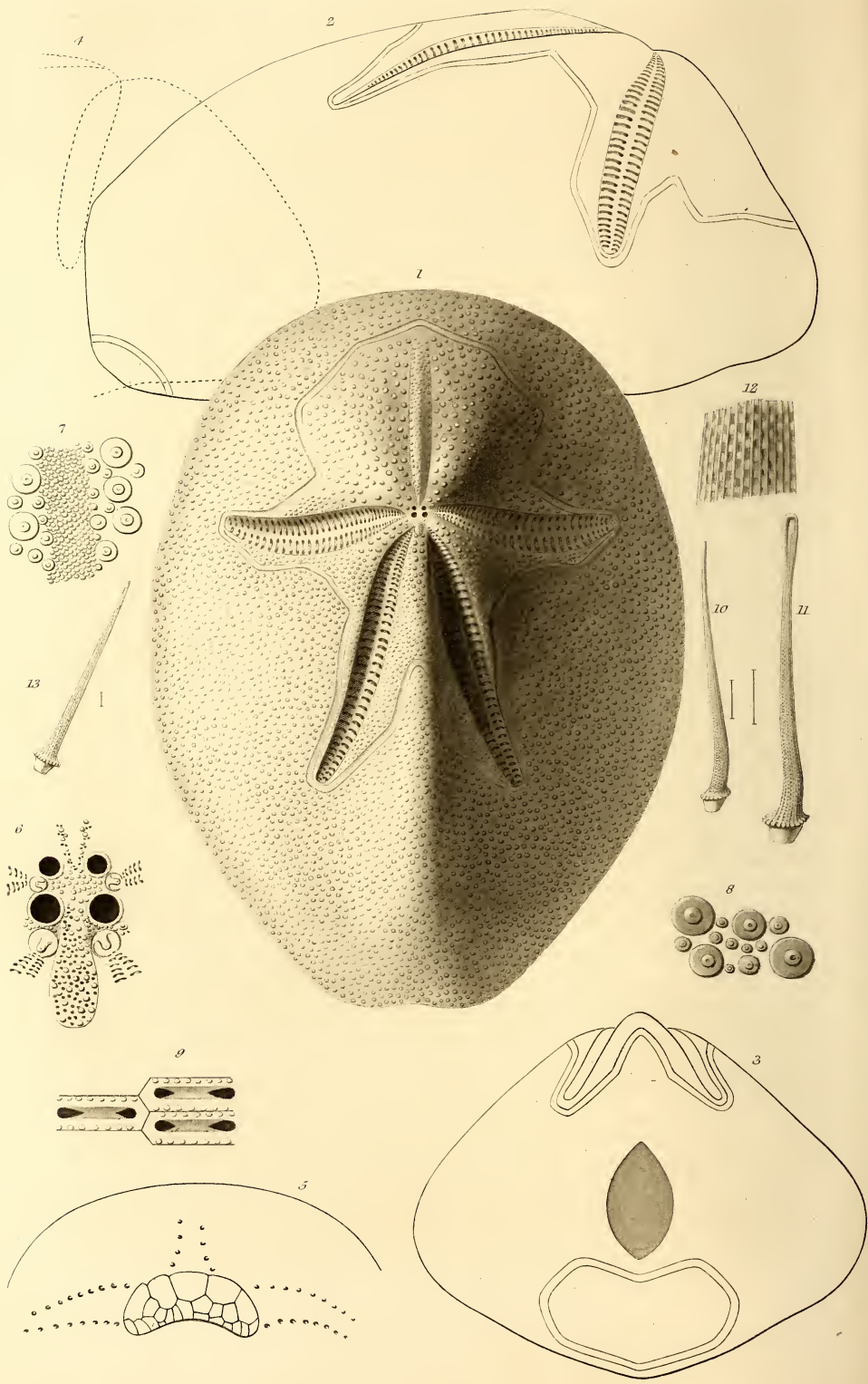
Fig. 9. Ambulacral pores, magnified.

Fig. 10–13. Spines more or less magnified.

Fig. 10. Is a lateral view, and 11, a front view of a spine with a spatulate tip.

March 1856.

E. FORBES (1852).



BRISSUS SCILLÆ Agassiz & Desor.